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Differences in behaviour of adsorbed water in kaolinites and montmorillonites in temperature range from -90°C to +140°C by dielectric spectroscopy

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Abstract

Two different types of natural layer aluminosilicates (clay minerals), montmorillonite with the exchangeable K+ and Ni2+ cations and kaolinite with the exchangeable K+ and Ba2+ cations, were investigated by dielectric spectroscopy. The different effects of water adsorption in montmorillonites and kaolinites on the dielectric response were observed in wide temperature (-90°C ÷ +140°C) and frequency (1 Hz ÷ 1 MHz) ranges. The influence of the nature of the hydration centers on adsorbed water dynamics and influence of ions nature on the activation energy values of the relaxation processes were discussed.

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